FGDC Annual Report to OMB
U.S. Department of Commerce Agency Report for FY 2003

The following outline should be used by FGDC Member Agencies (or Bureaus) for their Annual Spatial Data Reports, which will be consolidated by the FGDC and submitted to OMB. Reports **should be brief, using bullets where possible**. Please provide only the information that will be useful for OMB to assess the agencies' achievements and for establishing future direction.

Part A
GENERAL FEDERAL AGENCY RESPONSIBILITIES REPORT (All Agencies)

1. Agency or Bureau: Department of Commerce (DOC)—National Oceanic and Atmospheric Administration (NOAA) and U.S. Census Bureau

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5. Subcommittee or Working Group Participation (Subcommittees or Working Groups your agency is involved with, but does not lead).

   FGDC Base Cartographic Subcommittee
   FGDC Cadastral Subcommittee
   GPS Interagency Council
   FGDC Subcommittee on Spatial Climate Subcommittee
   FGDC Ad Hoc Metadata Working Group
   FGDC Biological Data Working Group
   FGDC Clearinghouse Working Group
   FGDC Coordination Group
   FGDC Earth Cover Working Group (Former Lead)
   FGDC Standards Working Group
   FGDC Civil Imagery and Remote Sensing Taskforce
   FGDC Homeland Security Working Group
   FGDC Tribal Working Group

FGDC Subcommittee on Federal Geodetic Control (Lead)
FGDC Subcommittee on Marine and Coastal Spatial Data (Lead)
FGDC Marine Boundary Working Group (Lead)
FGDC Subcommittee on Cultural & Demographic Data (Lead)
FGDC Cultural and Demographic Statistics Working Group (Lead)
FGDC Governmental Units Working Group (Lead)

6. Strategy: Has your agency prepared a detailed strategy for integrating geographic information and spatial data activities into your business process - in coordination with the FGDC strategy, pursuant to OMB Circular A-16? If yes, briefly describe.

   Yes. Three primary DOC agencies involved in this: (a) NOAA's Coastal Services Center; (b) the U.S. Census Bureau; and (c) NOAA's National Geodetic Survey have geographic and spatial data activities as central to their business processes.

   A) The Coastal National Spatial Data Infrastructure (NSDI) theme of the NOAA Coastal Services Center's strategic plan outlines a strategy pursuant to Circular A-16. The goals specifically related to spatial data activities are as follows:
   - The coastal management community understands and embraces the vision, concepts, and benefits of the NSDI.
   - Geospatial coastal and marine framework data are readily available for use by the coastal management community.
   - Innovative practices and technologies that facilitate the discovery, collection, description, access, and preservation of geospatial data are widely available to the coastal zone management community.
   - Foster, develop, and implement geospatial data applications in response to the needs of the coastal and marine communities.

   B) The primary business process of the U.S. Census Bureau has always depended upon geographic based information; demographic data tabulation is inextricably based upon and defined by geographic boundaries. In respect to FGDC standards and coordination, agency policies are established and continue to be in management's interest and oversight.

   C) The collecting, processing, archiving, and distribution of spatial data are the principal activities of the NOAA's National Geodetic Survey (NGS). The business process of the agency and these activities are one in the same.

7. Compliance: How are your spatial data holdings compliant with FGDC Standards? Also, please list the FGDC Standards you are using or plan to use in your organization.

NOAA and Census are both members of the FGDC Standards Working Group and are well aware of the standards that have been endorsed or are in the FGDC standards process. For example NOAA's Coastal Services Center has adopted and uses FGDC standards where applicable, including the *Content Standards for Digital Geospatial Metadata*, the *Shoreline Metadata Profile of the Content Standards for Digital Geospatial Metadata*, and the *Remote Sensing Extension of the Content Standard for Geospatial Metadata*.

The Geodetic Data Content Standard is now in development in conjunction with the GeoSpatial One-Stop Initiative. The agency's pertinent data holdings will be compliant with this standard. Other existing standards currently used are:

- Geospatial Positioning Accuracy Standards, Part 1: Reporting Methodology
- Geospatial Positioning Accuracy Standards, Part 2: Standards for Geodetic Networks
- Spatial Data Transfer Standard (SDTS) Part 6: Point Profile Metadata Profile for Shoreline Data

FGDC standards do not mandate internal business practices; therefore, Census spatial data compliance is solely at the exchange level. In regards to data exchange and availability, Census data are compliant with all applicable approved FGDC standards, including the Content Standard for Digital Geospatial Metadata version 2.

8. Redundancy: Prior to collecting data, how does your agency ensure that the data are not already available? This is accomplished in a number of ways within DOC.

   The Census Bureau maintains direct contact with more than 40,000 state, local, and tribal governments and, when possible, takes full advantage of local information. Examples of collaboration include the Boundary and Annexation Survey (BAS), and the MAF/TIGER Accuracy Improvement Program, both of which utilize state, local, and tribal resources in updating data holdings. The TIGER Enhancement Database (TED) integrates and maintains the state, local, and tribal contact information for those who provide local GIS files to the Census Bureau, with the content, accuracy and other relevant information pertaining to the local dataset. The Census Bureau provides metadata for data holdings and planned future acquisitions through the FGDC Clearinghouse. Further, the Census Bureau maintains close contact with other agencies that have an interest in geographic data and, when possible, collaborates with them in collection and provides them with extracts from Census Bureau holdings.

NOAA's Coastal Services Center searches its archives and that of its parent organization to ensure that redundancy does not occur. Additionally, Internet and FGDC Clearinghouse searches are performed.

NOAA's National Geodetic Survey coordinates data collection activities with its federal partners through the Federal Geodetic Control Subcommittee and works jointly with state and local entities in the collection of geodetic survey data to ensure that no redundancies exist.

9. Collection: Do your agency contracts and grants involving data collection include costs for NSDI standards? Yes where applicable.

   For example, all data development contracts/grants at NOAA's CSC require the contractor/grantee to develop metadata that meet FGDC's guidelines or to provide the CSC with the information needed to develop such metadata. Costs are defined coarsely, regardless of whether the work is a contract or grant, so it is not possible for us to look at budgets or invoices to determine the cost of FGDC compliance. At NOAA's NGS, all Statements of Work include requirements to meet the pertinent NSDI standards, the cost of which is covered by the contractor's cost estimates.

10. Clearinghouse: Is all the data and/or metadata that your agency is able to share with the public published on the NSDI Clearinghouse? If not, please cite barriers encountered. Yes.

    Until recently, the Census Bureau has forwarded its metadata to the USGS for maintenance on their node as the result of an assignment of a non-functioning portal site. However, Census Bureau metadata is now available on the US Census Bureau node, accessible through the FGDC Metadata Clearinghouse.

    Geodetic metadata are available via the Federal Geodetic Control Subcommittee and the NOAA Coastal Services Websites. The NGS data are available from the NGS Web site. Both data and metadata will be published on the NSDI Clearinghouse as part of the Geospatial One-Stop effort. NOAA's Coastal Services Center has a registered NSDI clearinghouse node called the Coastal Information Directory. In addition, there is a NOAA Clearinghouse for metadata from across all NOAA Line Offices known as NOAAServer which hosts 14 additional data clearinghouse nodes. Finally, NOAA's Coastal Services Center hosts and FGDC Clearinghouse gateway into the larger NSDI network of nodes.

11. E-Gov: How are you using geospatial data in your mission activities to provide better services? (Please list)

    Many of DOC's projects are E-gov applications.

The National Ocean Service (NOS) Enterprise Geographic Information System project is an example of and E-GOV application that's providing e-services to it's constituents. Geospatial data from all of the offices within NOS will be included in this system. The NOS Enterprise Spatial Information System will develop a unified and coordinated enterprise approach to spatial information management, utilization, and access across NOS. Using this approach to spatial information systems (GIS, remote sensing, Internet-based applications, and others) ensures that the power of diverse data is harnessed and makes it possible for internal and external users to benefit from NOS spatial data efforts.

NOAA's CSC Coastal Hazards projects are another example of an E-gov application. Projects in this theme area work to reduce the environmental, social, and economic impacts from coastal hazards by providing information and tools that facilitate increased decision-support capabilities for coastal managers. One project in particular is the Historical Hurricanes Mapping & Analysis Tool. This project is a cooperative effort of the NOAA Coastal Services Center and the NOAA Tropical Prediction Center/National Hurricane Center. It is an Internet-based mapping application allows users to query, plot, and display 150 years of data from the National Hurricane Center's Tropical Cyclone Best Track data set. The associated Web site includes links to text documents detailing particular storm events, as well as graphs depicting historical population data compared to hurricane strikes for coastal counties from Texas to Maine.

All aspects of then NGS primary mission of providing geodetic control for spatial reference are reliant upon geospatial data. Providing electronic access to spatial reference has major a major improvement in the agency's delivery of geospatial data products and services, and include:

- Web access to geodetic control data sheets
- Web access to GPS Continuously Operating Reference Station (CORS) data,
- Web-based On-line User Positioning Service (OPUS)

The data are also used in-house to accurately position aircraft when gathering remote sensing imagery for shoreline mapping and airport surveys.

From the Census Bureau:

- QuickFacts (http://quickfacts.census.gov/qfd/index.html), provides "Quick, easy access to facts about people, business, and geography", through general geographic based demographic and economic statistics.

- American FactFinder (http://factfinder.census.gov/servlet/BasicFactsServlet), accesses datasets and maps for population, housing, economics by geospatial references.
- Tiger/Line files (http://www.census.gov/geo/www/tiger/index.html), provides access to the publicly available detailed spatial data holdings of the Census Bureau
- Participation in FedStats (http://www.fedstats.gov/), which provides access to statistics collected by more than 70 federal agencies.

12. Geospatial One-Stop: How is your agency involved in the Geospatial One-Stop?

- Lead Agency for the Governmental Units Framework Data Content Standard
- Lead agency involved in the development of the Geodetic Data Content Standard.
- I-Team participation
- Principle partner in Geospatial One-Stop
- Geospatial One-Stop Board of Directors member
- As the chair of the FGDC Marine and Coastal Spatial Data Subcommittee and the FGDC Marine Boundary Working Group, the NOAA' s CSC is coordinating and communicating the objectives of the Geospatial One-Stop to its constituents and members of the subcommittee and working group.
- The CSC is participating with the FGDC Cadastral Subcommittee on the development of the marine component of the Cadastral Data Content Standard.
- Along with a substantial in-kind contribution, DOC has also transferred funds to the project in FY 2003.

13. Enterprise Architecture: Is geospatial data a component of your enterprise architecture? Please provide a brief summary of how geospatial data fits into your enterprise architecture.

Geospatial data is a fundamental component of all statistical data collection activities, tabulation operations, and publication activities at the Census Bureau. The foundation of Census geospatial data is TIGER, which provides geospatial data about individual features, address ranges, statistical and legal boundaries, and names, where applicable, for all of the U.S., Puerto Rico, and the Island Areas.

CSC is the co-lead on the National Ocean Service (NOS) Enterprise Geographic Information System project. Geospatial data from all of the offices within NOS will be included in this system. The NOS Enterprise

Spatial Information System will develop a unified and coordinated enterprise approach to spatial information management, utilization, and access across NOS. Using this approach to spatial information systems (GIS, remote sensing, Internet-based applications, and others) ensures that the power of diverse data is harnessed and makes it possible for internal and external users to benefit from NOS spatial data efforts.

Finally, NGS performs functions necessary for NOAA to attain its objective to "Develop the National Spatial Reference System (NSRS)," which is part of NOAA's strategic goal to "Promote Safe Navigation." NSRS provides the United States with a common geographic framework, is the foundation for the National Spatial Data Infrastructure (NSDI), and is essential for mapping, charting, navigation, boundary determination, property delineation, resource evaluation surveys, and scientific applications. Efforts to increase the reliability, accessibility, availability, accuracy, currency, and timeliness of NSRS are fully coordinated with NOAA's enterprise architecture.

14. Partnerships: What efforts are being taken to coordinate data and build partnerships at the field level for data collection and standards development? Identify partnerships and data sharing activities with other federal agencies, state, local, and tribal governments and other entities.

    NGS is very actively involved in numerous partnerships with other entities in providing access to consistent and accurate spatial reference.

    - Over half of the states have a Geodetic State Advisor in jointly funded agreement between NGS and the individual state. Geodetic State Advisors provide liaison between the state and NGS and assist in coordinating data collection and standards implementation in the state.

    - Sixty-one state, local, academic, private, and other federal agencies partner with NGS in providing Global Positioning System (GPS) data from Continuously Operating Reference Stations (CORS) to the NGS-managed National CORS network. NGS distributes data from National CORS over the Internet to aid GPS users in accurate positioning activities.

    - NGS accepts survey data from state and local organizations for validation, archiving in and distribution from the NGS data base. These data are used to build out the nationwide Federal Base, Cooperative Base, and User Densification Networks of permanently marked geodetic control points.

- NGS works in local partnerships developing spatial reference centers in California and Louisiana as well as with state geodetic surveys in North and South Carolina and with the Wisconsin Department of Transportation to implement Height Modernization in those states. Height Modernization is an NGS-led effort to provide local access to consistent and accurate height information through the use of GPS technology.

The Census Bureau continues a long-standing policy of interagency cooperation, as well as cooperation with state, local, and tribal governments for data collection. For example, the Census Bureau continues to collaborate with the USGS on the National Map project. At the state, local, and tribal level, Census conducts the Boundary and Annexation Survey (BAS) to elicit current boundary, name, and defining geographic content from state, local, and tribal entities. Furthermore, Census has maintained a key role in standards development for over forty years; dating back to original FIPS State, County, and Associated Areas Code development of the 1960s. The Census Bureau has an active partnership program to coordinate the use of state, local and tribal geospatial data, and works closely with the members of the National States Geographic Information Council, I-Teams, and similar organizations.

The Coastal National Spatial Data Infrastructure theme is one of the CSC's four strategic themes. Through its many partnerships and projects, the Coastal Services Center engages coastal and marine customers and encourage participation in NSDI activities, demonstrates the benefits of participation in the NSDI to existing and prospective coastal and marine management practitioners, and promotes the principles and practices of the NSDI to the coastal and marine community through formal and informal education, training, and marketing. Partnerships between the NOAA Coastal Services Center and coastal management organizations give rise to over 100 projects each year. These projects produce new tools and approaches that often can be applied nationwide. Many of the Coastal Services Center's activities are undertaken in collaboration with partners from the NOAA line offices—National Ocean Service (NOS), National Environmental Satellite, Data, and Information Service (NESDIS), Office of Oceanic and Atmospheric Research (OAR), National Marine Fisheries Service (NMFS), and National Weather Service (NWS)— other federal agencies, public and private coastal resource management and business development organizations.

NOAA's CSC partners directly with the FGDC to provide metadata training to tribal governments and also provides metadata training and educational materials to its partners throughout the year.

15. Concerns or Lessons Learned: Are there areas or issues regarding spatial data that require attention, or lessons learned that you would like to share with others? Please describe. There are five concerns that we see at this time.

- Coordination: The inability to achieve meaningful geospatial data coordination. One mission of the FGDC is to coordinate geospatial data collection and exchange activities between federal agencies, and by extension, non-federal organizations. Unfortunately, the FGDC is limited to simply encouraging the participating organizations to coordinate, and has inadequate authority to do more. There is, at this time, no functioning method that has been institutionalized within individual agency operations for coordination of geospatial activities. This weakness is a reflection more of agency methods of doing business, rather than a weakness in the FGDC organization or technical ability to fulfill its mission. Some method of assuring that agencies coordinate and, when possible, cooperate must be found.

- Consistency: The ability to smoothly integrate a point's coordinates with other points from different sources has been addressed by the promulgation of official national datums. The North American Datum of 1983 (NAD 83) applies to horizontal coordinates and ellipsoid heights and the North American Vertical Datum of 1988 (NAVD 88) applies to vertical coordinates. Software tools for have been developed by NGS to transform coordinates between datums.

- Accuracy: The ability to regularly achieve high levels (a few centimeters) of positional accuracy has been vastly improved by employing GPS techniques developed by NGS. This effort continues in concert with enhancements to GPS satellites.

- Timeliness: The ability to determine consistent and accurate coordinates when there needed (i.e., as quickly as possible) is the major issue at present, as the longer it takes to accurately position a point, the greater the labor costs per point. Techniques, procedures, and best practices are continually being developed by NGS to reduce the time required to position a point to the desired level of accuracy.

- State Legislation on Spatial Reference: The issue is relevancy of existing state legislation regarding spatial reference for establishing boundaries and the use of electronically accessed geodetic control (i.e., GPS continuously operating reference stations) for this purpose. This is primarily of concern to land surveyors who use NGS data. Most states have explicit language in their legislation regarding land surveying and how valid boundaries are referenced. Most of this legislation was written in the era when classical line-of-sight surveying techniques were used to connect, either directly or

indirectly, boundary surveys to permanently marked geodetic control. The use of GPS techniques has revolutionized surveying such that a land surveyor no longer needs to physically visit a survey control marker. Some existing state legislation may no longer adequately relevant to current technology.